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| <u>#2</u> | ((sequen* <near/2> pattern*) <and> (prox* <near/2> sens*) <and> (slid* <near/2> (switch* or direct*)) <in> pdfdata) <and> (pyr >= 1950 <and> pyr <= 2007)               | 0  |
| <u>#3</u> | ((sequen* <near/4> pattern*) <and> (prox* <near/4> sens*) <and> (slid* <near/4> (switch* or direct*)) <in> pdfdata) <and> (pyr >= 1950 <and> pyr <= 2007)               | 0  |
| <u>#4</u> | ((sequen* <near/4> pattern*) <and> (prox* <near/4> sens*) <and> ((switch* or direct*)) <in> pdfdata) <and> (pyr >= 1950 <and> pyr <= 2007)                              | 20 |

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Pal, S.K.; Talwar, V.; Mitra, P.;  
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- ☐ 8. **Linguistic analysis of experimental curves**  
Mottl, V.V.; Muchnik, I.B.;  
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- ☐ 10. **Unbalance and harmonics detection in induction motors using an optical fiber sens**  
Corres, J.M.; Bravo, J.; Arregui, F.J.; Matias, I.R.;  
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- ☐ 11. **Force interaction and allocation for the legs of a walking vehicle**  
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- ☐ 12. **The application of neural networks to fuel processors for fuel-cell vehicles**  
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- ☐ 13. **Shielding and electrical performance of silicon detector supermodules**  
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- ☐ **14. HMM based online handwriting recognition**  
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[Pattern Analysis and Machine Intelligence, IEEE Transactions on](#)  
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- ☐ **15. Modeling context-aware e-learning scenarios**  
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- ☐ **16. A hierarchical system structure for coordinated control of industrial manipulators**  
Kang Shin; Malin, S.;  
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- ☐ **18. Distributed Data Streams Indexing using Content-Based Routing Paradigm**  
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- ☐ **19. Amplitude spectrum-based gait recognition**  
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- ☐ **20. Experimental validation of pulse contour methods for estimating stroke volume at**  
Yinghong Yu; Jiang Ding; Lili Liu; Salo, R.; Spinelli, J.; Tockman, B.; Pochet, T.; Auricchio  
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L7: Entry 13 of 13

File: USPT

Sep 9, 1980

DOCUMENT-IDENTIFIER: US 4221975 A  
TITLE: Touch activated controller and method

Abstract Text (1):

A touch activated controller generates UP/DOWN control signals in response to movement of a human finger (or other comparable contact) along a control surface thereof. The UP information is derived from movement of the finger in one direction and the DOWN information is derived from movement in a substantially opposite direction. This system generates a sequence of control signals in one or the other of the two directions. In addition, when the finger is removed from the device the output remains in its last previous state or condition existing before removing the finger. Thus, the logic of the system is sensitive substantially to motion and direction of movement so that the logic of the operation of the device closely resembles the motion of a thumbwheel control. Merely placing a finger on the surface of thumbwheel or on the surface of the disclosed device generates no change in the position of the thumbwheel or the output of the device herein. When a finger is moved in one direction while in contact with the control surface of the device or the thumbwheel the output of the device will generate control signals counting up or down depending on the direction of movement of the finger.

Brief Summary Text (5):

In general, a touch activated controller for generating signals adapted to be coupled to operate apparatus in response thereto comprises a body of insulating material and a series of discrete sense lines forming portions of capacitors carried in closely spaced relation by the insulation material. Each of the sense lines functions as one plate of a capacitor when in the proximate presence of the person's finger or other body portion. A series of discrete sensing circuits are respectively associated with related ones of the sense lines. The circuits serve to generate a first digital output in response to the absence of a body portion at a sense line associated therewith and a second digital output in response to the presence of a body portion thereat so as to sense and indicate the presence of a body portion in proximity to each of the sense lines. Means are coupled to the last named means for generating a sequence of control signals representing increasing or decreasing information dependent upon movement of the human finger or other body part across the sense lines in one or another of two substantially opposite directions.

Detailed Description Text (16):

Circuits 40 are arranged whereby in the absence of a capacitance located on the input leads 41-55 thereof the output lead 57 will provide a digital zero. On the other hand when a person's finger is sufficiently close to one of the sense lines 19, i.e. to be in the "proximate presence" of a sense line 19, so as to cause it to constitute a capacitance on the input line of the circuit, the output on lead 57 becomes a digital "1" as now to be described.

Detailed Description Text (18):

When sense line 19 is not in the proximate presence of a finger the resulting value

of capacitance associated with input line 41 (or input lines 42-55 for the remaining circuits 40) is zero or near zero. Under these conditions, the voltage at 38 from operational amplifier 37 will be at or nearly equal to the voltage at 62.

#### CLAIMS:

2. In a touch activated controller for generating a cyclic sequence of control signals representing increasing or decreasing information dependent upon the direction of movement of a human finger or other body part thereacross, a support body, a layer of insulating material carried by said body, a series of conductive elements carried on the obverse surface of said layer in spaced apart relation distributed along said obverse surface and adapted to be disposed and spaced sufficiently closely so that a human finger can be moved in a continuous plane thereacross from one to the next while continuously overlapping a plurality of each of said conductive elements in the proximate presence thereof, each of said conductive elements serving to form a capacitor portion, a series of conductors carried on the reverse side of said layer and extending therealong, said conductors being spaced laterally apart and distributed across the width of said reverse side, and means interconnecting successive ones of said conductive elements to successive ones of said conductors to couple to said conductors the equivalent of a capacitor whenever a human finger or body part is in the proximate presence of one of said conductive elements.

3. A touch activated UP/DOWN controller for generating signals adapted to be coupled to operate apparatus in response thereto comprising a body of insulating material, a series of discrete passive portions carried by said insulation and disposed so that a human finger can be moved in a continuous plane thereacross from one to the next while continuously overlapping a plurality of said passive portions in the proximate presence of each, a series of discrete sensing circuit means respectively associated with related ones of said passive portions, said portions serving to develop an input signal for said circuit means when in the proximate presence of a person's finger or other body portion, said circuit means serving to provide a first digital output in response to the absence of a body portion at a discrete passive portion associated therewith and a second digital output in response to the presence of a body portion thereat, means coupled to said series of sensing circuit means serving to generate a sequence of control signals upon movement of the human finger or other body part across said series of discrete portions in one or another of two substantially opposite directions, said sequence of control signals representing increasing or decreasing information dependent upon the direction of movement of the finger.

4. In a touch activated controller for generating a cyclic sequence of control signals representing increasing or decreasing information dependent upon the direction of movement of a human finger or other body part thereacross, a support body, a layer of insulating material carried by said body, a series of elements carried on the obverse surface of said layer in spaced apart relation distributed along said obverse surface and adapted to be oriented so that a human finger can be moved thereacross in over lapping relation therebetween from one group thereof to another, each of said elements serving to develop a signal when in the proximate presence of a human finger or other body part, a series of conductors carried on the reverse side of said layer and extending therealong to carry said signals, said conductors being spaced laterally apart and distributed across the width of said reverse side, and means interconnecting successive groups of said elements to successive groups of said conductors to couple to said conductors said signals wherever a human finger or body part is disposed in the proximate presence of one of said conductive elements.

9. In a touch activated controller for generating signals adapted to be coupled to operate apparatus comprising a layer of insulation material, a series of sensing lines distributed in closely spaced relation along said layer, said series of sense

lines being arranged to include a plurality of groups of a predetermined number of sequentially arranged sense lines disposed in a cyclically recurring sequence of stages, a spacing layer of predetermined uniform thickness carried across said sense lines to be contacted by a person's finger to dispose the fingerprint portion of the finger in the proximate presence of some of the sense lines of one of said groups to provide an input signal from each said sense line, a series of discrete sensing circuit means corresponding in number to said predetermined number of sense lines of one of said groups thereof, each said sensing circuit means being coupled in common to a sense line at the same stage of each said group whereby each sensing circuit means is coupled to more than one sense line to permit the pattern of sense lines in the proximate presence of the fingerprint portion of a finger to move from one group to the next.

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L7: Entry 13 of 13

File: USPT

Sep 9, 1980

US-PAT-NO: 4221975

DOCUMENT-IDENTIFIER: US 4221975 A

TITLE: Touch activated controller and method

DATE-ISSUED: September 9, 1980

INVENTOR-INFORMATION:

| NAME              | CITY        | STATE | ZIP CODE | COUNTRY |
|-------------------|-------------|-------|----------|---------|
| Ledniczki; Ferenc | Foster City | CA    |          |         |
| Patak; Richard J. | San Jose    | CA    |          |         |
| Wayne; Ronald G.  | Milpitas    | CA    |          |         |

ASSIGNEE-INFORMATION:

| NAME                                | CITY        | STATE | ZIP CODE | COUNTRY | TYPE CODE |
|-------------------------------------|-------------|-------|----------|---------|-----------|
| Touch Activated Switch Arrays, Inc. | Santa Clara | CA    |          |         | 02        |

APPL-NO: 05/897686   [\[PALM\]](#)

DATE FILED: April 19, 1978

INT-CL-ISSUED: [02] G08C 9/02, H01H 35/00

INT-CL-CURRENT:

| TYPE | IPC                         | DATE     |
|------|-----------------------------|----------|
| CIPS | <a href="#">H03 K 17/94</a> | 20060101 |
| CIPS | <a href="#">H03 K 17/96</a> | 20060101 |

US-CL-ISSUED: 307/116; 340/365C

US-CL-CURRENT: [307/116](#); [341/20](#), [D13/158](#)

FIELD-OF-CLASSIFICATION-SEARCH: 340/365C, 340/337, 340/332, 340/325, 340/21, 340/524, 328/5, 307/116, 307/119, 307/120, 307/121, 307/122, 307/123, 307/149, 307/152, 84/DIG.7, 361/181

See application file for complete search history.

PRIOR-ART-DISCLOSED:

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|                          | PAT-NO         | ISSUE-DATE    | PATENTEE-NAME | US-CL      |
|--------------------------|----------------|---------------|---------------|------------|
| <input type="checkbox"/> | <u>T904088</u> | November 1972 | Crouse        | 340/365C   |
| <input type="checkbox"/> | <u>3648029</u> | March 1972    | Ungnadner     | 340/21 X   |
| <input type="checkbox"/> | <u>3786497</u> | January 1974  | Davis         | 340/365C X |
| <input type="checkbox"/> | <u>3921166</u> | November 1975 | Volpe         | 340/365C   |
| <input type="checkbox"/> | <u>4121204</u> | October 1978  | Welch et al.  | 361/181 X  |

ART-UNIT: 211

PRIMARY-EXAMINER: Hix; L. T.

ASSISTANT-EXAMINER: Dwyer; James L.

ATTY-AGENT-FIRM: Flehr, Hohbach, Test, Albritton & Herbert

ABSTRACT:

A touch activated controller generates UP/DOWN control signals in response to movement of a human finger (or other comparable contact) along a control surface thereof. The UP information is derived from movement of the finger in one direction and the DOWN information is derived from movement in a substantially opposite direction. This system generates a sequence of control signals in one or the other of the two directions. In addition, when the finger is removed from the device the output remains in its last previous state or condition existing before removing the finger. Thus, the logic of the system is sensitive substantially to motion and direction of movement so that the logic of the operation of the device closely resembles the motion of a thumbwheel control. Merely placing a finger on the surface of thumbwheel or on the surface of the disclosed device generates no change in the position of the thumbwheel or the output of the device herein. When a finger is moved in one direction while in contact with the control surface of the device or the thumbwheel the output of the device will generate control signals counting up or down depending on the direction of movement of the finger.

9 Claims, 10 Drawing figures

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☐ 1. Document ID: US 20060247692 A1

L7: Entry 1 of 13

File: PGPB

Nov 2, 2006

PGPUB-DOCUMENT-NUMBER: 20060247692

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060247692 A1

TITLE: Method and apparatus for optimizing cardiac resynchronization therapy

PUBLICATION-DATE: November 2, 2006

INVENTOR-INFORMATION:

| NAME             | CITY            | STATE | COUNTRY |
|------------------|-----------------|-------|---------|
| Yang; Zhongping  | Woodbury        | MN    | US      |
| Hjelle; Mark A.  | White Bear Lake | MN    | US      |
| Hine; Douglas S. | Forest Lake     | MN    | US      |

US-CL-CURRENT: 607/9

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| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Index | Drawings |
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☐ 2. Document ID: US 20060062940 A1

L7: Entry 2 of 13

File: PGPB

Mar 23, 2006

PGPUB-DOCUMENT-NUMBER: 20060062940

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060062940 A1

TITLE: HOLIDAY COUNTDOWN INTERACTIVE DISPLAY

PUBLICATION-DATE: March 23, 2006

INVENTOR-INFORMATION:

| NAME                | CITY         | STATE | COUNTRY |
|---------------------|--------------|-------|---------|
| Steiger; Theresa F. | Liberty      | MO    | US      |
| Short; Nancy        | Roeland Park | KS    | US      |
| Donikowski; Ruth    | Kansas City  | MO    | US      |

|                        |                 |    |    |
|------------------------|-----------------|----|----|
| Larsen; Kristine       | Prairie Village | KS | US |
| Olson; Keri Lauderdale | Lee's Summit    | MO | US |
| Staley; Tim            | Lenexa          | KS | US |

US-CL-CURRENT: 428/18; 428/19

|      |       |          |       |        |                |      |           |           |             |        |     |        |
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### ☐ 3. Document ID: US 20050137648 A1

L7: Entry 3 of 13

File: PGPB

Jun 23, 2005

PGPUB-DOCUMENT-NUMBER: 20050137648  
 PGPUB-FILING-TYPE: new  
 DOCUMENT-IDENTIFIER: US 20050137648 A1

TITLE: System and method suitable for treatment of a patient with a neurological deficit by sequentially stimulating neural pathways using a system of discrete implantable medical devices

PUBLICATION-DATE: June 23, 2005

#### INVENTOR-INFORMATION:

| NAME                | CITY            | STATE | COUNTRY |
|---------------------|-----------------|-------|---------|
| Cosendai, Gregoire  | Cudrefin        | CA    | CH      |
| Zilberman, Yitzhak  | Santa Clarita   | CA    | US      |
| Kuschnier, Doug     | Santa Clarita   | CA    | US      |
| Ripley, Anne Marie  | Los Angeles     | FL    | US      |
| Turk, Ruth          | Bentley         | CA    | GB      |
| Burridge, Jane      | Salisbury       | CA    | GB      |
| Notley, Scott V.    | Southampton     | CA    | GB      |
| Davis, Ross         | Melbourne Beach | CA    | US      |
| Hansen, Morten      | Valencia        | CA    | US      |
| Mandell, Lee J.     | West Hills      |       | US      |
| Schulman, Joseph H. | Santa Clarita   |       | US      |
| Dell, Robert Dan    | Valencia        |       | US      |
| Gord, John C.       | Venice          |       | US      |

US-CL-CURRENT: 607/48

|      |       |          |       |        |                |      |           |           |             |        |     |        |
|------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|--------|-----|--------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | RMK | Draw C |
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### ☐ 4. Document ID: US 20040263494 A1

L7: Entry 4 of 13

File: PGPB

Dec 30, 2004

PGPUB-DOCUMENT-NUMBER: 20040263494  
 PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040263494 A1

TITLE: Location sensitive display device, system, and method of providing animation sequences

PUBLICATION-DATE: December 30, 2004

INVENTOR-INFORMATION:

| NAME               | CITY       | STATE | COUNTRY |
|--------------------|------------|-------|---------|
| Poor, Kyle W.      | Orlando    | FL    | US      |
| Holzberg, Röger S. | Burbank    | CA    | US      |
| Dietz, Paul H.     | Hopkinton  | MA    | US      |
| Stein, Lawrence P. | Windermere | FL    | US      |
| Swirsky, Robert    | Sunnyvale  | CA    | US      |

US-CL-CURRENT: 345/204

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Image | Draw G |
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☐ 5. Document ID: US 20020143368 A1

L7: Entry 5 of 13

File: PGPB

Oct 3, 2002

PGPUB-DOCUMENT-NUMBER: 20020143368

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020143368 A1

TITLE: Four-chamber pacing system for optimizing cardiac output and determining heart condition

PUBLICATION-DATE: October 3, 2002

INVENTOR-INFORMATION:

| NAME             | CITY      | STATE | COUNTRY |
|------------------|-----------|-------|---------|
| Bakels, Arnoldus | Simpelved |       | NL      |
| Leinders, Robert | Limbricht |       | NL      |
| de Roos, Cobus   | Landgraaf |       | NL      |

US-CL-CURRENT: 607/9

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Image | Draw G |
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☐ 6. Document ID: US 20010010009 A1

L7: Entry 6 of 13

File: PGPB

Jul 26, 2001

PGPUB-DOCUMENT-NUMBER: 20010010009

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010010009 A1

TITLE: Four-chamber pacing system for optimizing cardiac output and determining heart condition

PUBLICATION-DATE: July 26, 2001

INVENTOR-INFORMATION:

| NAME             | CITY       | STATE | COUNTRY |
|------------------|------------|-------|---------|
| Bakels, Arnoldus | Simpelveld |       | NL      |
| Leinders, Robert | Limbricht  |       | NL      |
| de Roos, Cobus   | Landgraaf  |       | NL      |

US-CL-CURRENT: 607/9

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Index | Drawings |
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☐ 7. Document ID: US 6754530 B2

L7: Entry 7 of 13

File: USPT

Jun 22, 2004

US-PAT-NO: 6754530

DOCUMENT-IDENTIFIER: US 6754530 B2

TITLE: Four-chamber pacing system for optimizing cardiac output and determining heart condition

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Index | Drawings |
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☐ 8. Document ID: US 6238420 B1

L7: Entry 8 of 13

File: USPT

May 29, 2001

US-PAT-NO: 6238420

DOCUMENT-IDENTIFIER: US 6238420 B1

TITLE: Four-chamber pacing system for optimizing cardiac output and determining heart condition

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | Index | Drawings |
|------|-------|----------|-------|--------|----------------|------|-----------|-----------|-------------|--------|-------|----------|
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☐ 9. Document ID: US 6223082 B1

L7: Entry 9 of 13

File: USPT

Apr 24, 2001

US-PAT-NO: 6223082

DOCUMENT-IDENTIFIER: US 6223082 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Four-chamber pacing system for optimizing cardiac output and determining heart condition

|      |       |          |       |        |                |      |           |  |  |        |      |          |
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| Full | Title | Citation | Front | Review | Classification | Date | Reference |  |  | Claims | FIGS | Drawings |
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☐ 10. Document ID: US 6223079 B1

L7: Entry 10 of 13

File: USPT

Apr 24, 2001

US-PAT-NO: 6223079

DOCUMENT-IDENTIFIER: US 6223079 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Bi-ventricular pacing method

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |  |  | Claims | FIGS | Drawings |
|------|-------|----------|-------|--------|----------------|------|-----------|--|--|--------|------|----------|

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L1: Entry 1 of 2

File: PGPB

Jun 23, 2005

PGPUB-DOCUMENT-NUMBER: 20050137765

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050137765 A1

TITLE: Vehicle accessory proximity sensor slide switch

PUBLICATION-DATE: June 23, 2005

INVENTOR-INFORMATION:

| NAME                | CITY             | STATE | COUNTRY |
|---------------------|------------------|-------|---------|
| Hein, David A.      | Sterling Heights | MI    | US      |
| Hicks, Thomas       | Livonia          | MI    | US      |
| Mulvihill, James A. | Royal Oak        | MI    | US      |
| Edwards, Lori A.    | Ann Arbor        | MI    | US      |

APPL-NO: 10/742341 [PALM]

DATE FILED: December 19, 2003

INT-CL-PUBLISHED: [07] G06F 19/00

INT-CL-CURRENT:

TYPE IPC                      DATE  
CIPP G06 F 19/00    20060101

US-CL-PUBLISHED: 701/036; 307/010.1

US-CL-CURRENT: 701/36; 307/10.1

REPRESENTATIVE-FIGURES: 3

ABSTRACT:

A method is provided for operating a proximity sensing unit for controlling an accessory device of a vehicle. A plurality of proximity sensors is disposed in a sequential pattern within a sensing unit whereby the proximity sensors are responsive to a manual activation. At least two activation signals are received from at least two proximity sensors in response to the manual activation. An activation sequence of at least two activation signals is determined. One of a plurality of control actions associated with the activation sequence is selected. A control action is initiated for controlling an operation of the accessory device.

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L1: Entry 2 of 2

File: DWPI

Jun 23, 2005

DERWENT-ACC-NO: 2005-487238

DERWENT-WEEK: 200549

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TITLE: Proximity sensing unit operating method for controlling vehicle accessory device, involves selecting control actions associated with activation sequence, and initiating control action for controlling operation of accessory device

INVENTOR: EDWARDS, L A; HEIN, D A ; HICKS, T ; MULVIHILL, J A

PATENT-ASSIGNEE: EDWARDS L A (EDWAI), HEIN D A (HEINI), HICKS T (HICKI), MULVIHILL J A (MULVI)

PRIORITY-DATA: 2003US-0742341 (December 19, 2003)

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PATENT-FAMILY:

| PUB-NO   | PUB-DATE      | LANGUAGE | PAGES | MAIN-IPC   |
|--|---------------|----------|-------|------------|
| <input type="checkbox"/> <a href="#">US 20050137765 A1</a> | June 23, 2005 |          | 010   | G06F019/00 |

APPLICATION-DATA:

| PUB-NO          | APPL-DATE         | APPL-NO        | DESCRIPTOR |
|-----------------|-------------------|----------------|------------|
| US20050137765A1 | December 19, 2003 | 2003US-0742341 |            |

INT-CL (IPC): G06F 19/00

ABSTRACTED-PUB-NO: US20050137765A

BASIC-ABSTRACT:

NOVELTY - The method involves providing a set of proximity sensors (12) placed in a sequential pattern within a sensing unit. Two activation signals are received from the sensors in response to a manual activation. An activation sequence of the activation signals is determined. A set of control actions associated with the activation sequence is selected. A control action is initiated for controlling an operation of an accessory device.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a vehicle accessory control sensing unit.

USE - Used for operating a proximity sensing unit for controlling an accessory device of a vehicle.

ADVANTAGE - The control actions associated with the activation sequence is selected



and initiated, thus effectively controlling the accessory device of the vehicle.

DESCRIPTION OF DRAWING(S) - The drawing shows an illustration of an accessory control architecture.

Sensors 12

LED 18

Controller 22

Sensor control circuit board 24

Wire harness 25

ABSTRACTED-PUB-NO: US20050137765A  
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.3/10

DERWENT-CLASS: S03 U21 X22 X26

EPI-CODES: S03-C02B; S03-C06; U21-B02C1; X22-J; X22-J03A; X22-X06D; X22-X06X; X26-H; X26-U07;

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L5: Entry 3 of 4

File: USPT

Sep 9, 1980

DOCUMENT-IDENTIFIER: US. 4221975 A

TITLE: Touch activated controller and method

Abstract Text (1):

A touch activated controller generates UP/DOWN control signals in response to movement of a human finger (or other comparable contact) along a control surface thereof. The UP information is derived from movement of the finger in one direction and the DOWN information is derived from movement in a substantially opposite direction. This system generates a sequence of control signals in one or the other of the two directions. In addition, when the finger is removed from the device the output remains in its last previous state or condition existing before removing the finger. Thus, the logic of the system is sensitive substantially to motion and direction of movement so that the logic of the operation of the device closely resembles the motion of a thumbwheel control. Merely placing a finger on the surface of thumbwheel or on the surface of the disclosed device generates no change in the position of the thumbwheel or the output of the device herein. When a finger is moved in one direction while in contact with the control surface of the device or the thumbwheel the output of the device will generate control signals counting up or down depending on the direction of movement of the finger.

Brief Summary Text (5):

In general, a touch activated controller for generating signals adapted to be coupled to operate apparatus in response thereto comprises a body of insulating material and a series of discrete sense lines forming portions of capacitors carried in closely spaced relation by the insulation material. Each of the sense lines functions as one plate of a capacitor when in the proximate presence of the person's finger or other body portion. A series of discrete sensing circuits are respectively associated with related ones of the sense lines. The circuits serve to generate a first digital output in response to the absence of a body portion at a sense line associated therewith and a second digital output in response to the presence of a body portion thereat so as to sense and indicate the presence of a body portion in proximity to each of the sense lines. Means are coupled to the last named means for ~~generating a~~ sequence of control signals representing increasing or decreasing information dependent upon movement of the human finger or other body part across the sense lines in one or another of two substantially opposite directions.

Detailed Description Text (16):

Circuits 40 are arranged whereby in the absence of a capacitance located on the input leads 41-55 thereof the output lead 57 will provide a digital zero. On the other hand when a person's finger is sufficiently close to one of the sense lines 19, i.e. to be in the "proximate presence" of a sense line 19, so as to cause it to constitute a capacitance on the input line of the circuit, the output on lead 57 becomes a digital "1" as now to be described.

## CLAIMS:

2. In a touch activated controller for generating a cyclic sequence of control signals representing increasing or decreasing information dependent upon the

direction of movement of a human finger or other body part thereacross, a support body, a layer of insulating material carried by said body, a series of conductive elements carried on the obverse surface of said layer in spaced apart relation distributed along said obverse surface and adapted to be disposed and spaced sufficiently closely so that a human finger can be moved in a continuous plane thereacross from one to the next while continuously overlapping a plurality of each of said conductive elements in the proximate presence thereof, each of said conductive elements serving to form a capacitor portion, a series of conductors carried on the reverse side of said layer and extending therealong, said conductors being spaced laterally apart and distributed across the width of said reverse side, and means interconnecting successive ones of said conductive elements to successive ones of said conductors to couple to said conductors the equivalent of a capacitor whenever a human finger or body part is in the proximate presence of one of said conductive elements.

4. In a touch activated controller for generating a cyclic sequence of control signals representing increasing or decreasing information dependent upon the direction of movement of a human finger or other body part thereacross, a support body, a layer of insulating material carried by said body, a series of elements carried on the obverse surface of said layer in spaced apart relation distributed along said obverse surface and adapted to be oriented so that a human finger can be moved thereacross in over lapping relation therebetween from one group thereof to another, each of said elements serving to develop a signal when in the proximate presence of a human finger or other body part, a series of conductors carried on the reverse side of said layer and extending therealong to carry said signals, said conductors being spaced laterally apart and distributed across the width of said reverse side, and means interconnecting successive groups of said elements to successive groups of said conductors to couple to said conductors said signals wherever a human finger or body part is disposed in the proximate presence of one of said conductive elements.

9. In a touch activated controller for generating signals adapted to be coupled to operate apparatus comprising a layer of insulation material, a series of sensing lines distributed in closely spaced relation along said layer, said series of sense lines being arranged to include a plurality of groups of a predetermined number of sequentially arranged sense lines disposed in a cyclically recurring sequence of stages, a spacing layer of predetermined uniform thickness carried across said sense lines to be contacted by a person's finger to dispose the fingerprint portion of the finger in the proximate presence of some of the sense lines of one of said groups to provide an input signal from each said sense line, a series of discrete sensing circuit means corresponding in number to said predetermined number of sense lines of one of said groups thereof, each said sensing circuit means being coupled in common to a sense line at the same stage of each said group whereby each sensing circuit means is coupled to more than one sense line to permit the pattern of sense lines in the proximate presence of the fingerprint portion of a finger to move from one group to the next.

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